		Sheet 1 of 1
Rev: 08/01/20		

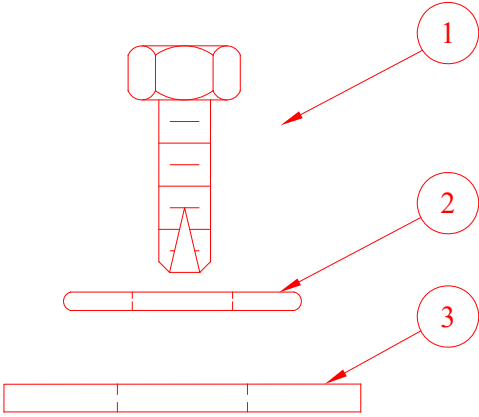
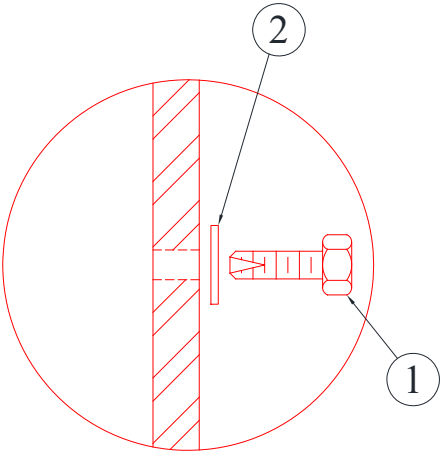
# 1502

## URD HARDWARE


### CONTAINS

- 1502-02 ANCHOR ASSEMBLY**
- 1502-05 BUSHING INSERTS 15KV**
- 1502-07 ARRESTER ELBOW & PARKING STAND**
- 1502-09 PARKING STAND 200 AMP 15KV**
- 1502-15 ELBOWS 200 / 600 AMP**
- 1502-17 SECONDARY CONNECTORS FOR XFMRS**
- 1502-19 JUNCTION LOADBREAK 200 AMP 15KV**
- 1502-20 FAULT INDICATORS & LED CABLES**
- 1502-25 FUSE UNITS FOR PAD MOUNT XFMR**
- 1502-30 FUSE UNITS FOR SWITCHGEAR**

UNDERGROUND APPARATUS  
URD HARDWARE  
ANCHOR ASSEMBLY



1502-02-01

	<b>UNDERGROUND APPARATUS</b> <b>URD HARDWARE</b> <b>ANCHOR ASSEMBLY</b>	<b>1502-02</b>
		Sheet 2 of 2
Rev: 08/01/20		

**CU**

<b>CU-ID</b>	<b>CU-REF</b>	<b>CU-DESCRIPTION</b>
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ANCHARDWARECIPPAD	15020201	ANCH HARDWARE FOR CIP PADS
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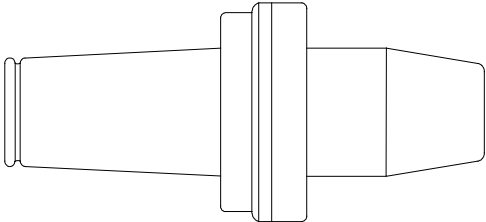
ID	PART NUM	PART DESC	QTY	CU-REF
1	0000024211	SCREW, SELF TAPPING, HEX HEAD, ZINC, #10 X 1 IN.	1 EA	15020201
2	0000008494	WASHER ROUND HOT DIP GALV 1/2 INCH	1 EA	15020201
3	0000008499	WASHER SQ HOT DIP GALV 2-1/4 IN X 2-1/4 IN X 3/16 IN	1 EA	15020201

<b>1502-05</b>	<b>UNDERGROUND APPARATUS</b>	
Sheet 1 of 2	<b>URD HARDWARE</b>	
	<b>BUSHING INSERTS 15KV</b>	Rev: 08/01/20

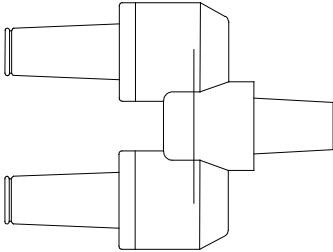
Transformers are purchased with bushing wells on the primary terminals. Bushing inserts are installed in bushing wells for loadbreak elbow and arrester applications.

Use insulated bushing caps to dead-end bushing inserts or feed thru inserts; always ground them to the ground conductor with at least one strand of #14 copper wire.

1502-05-01  
1502-05-10

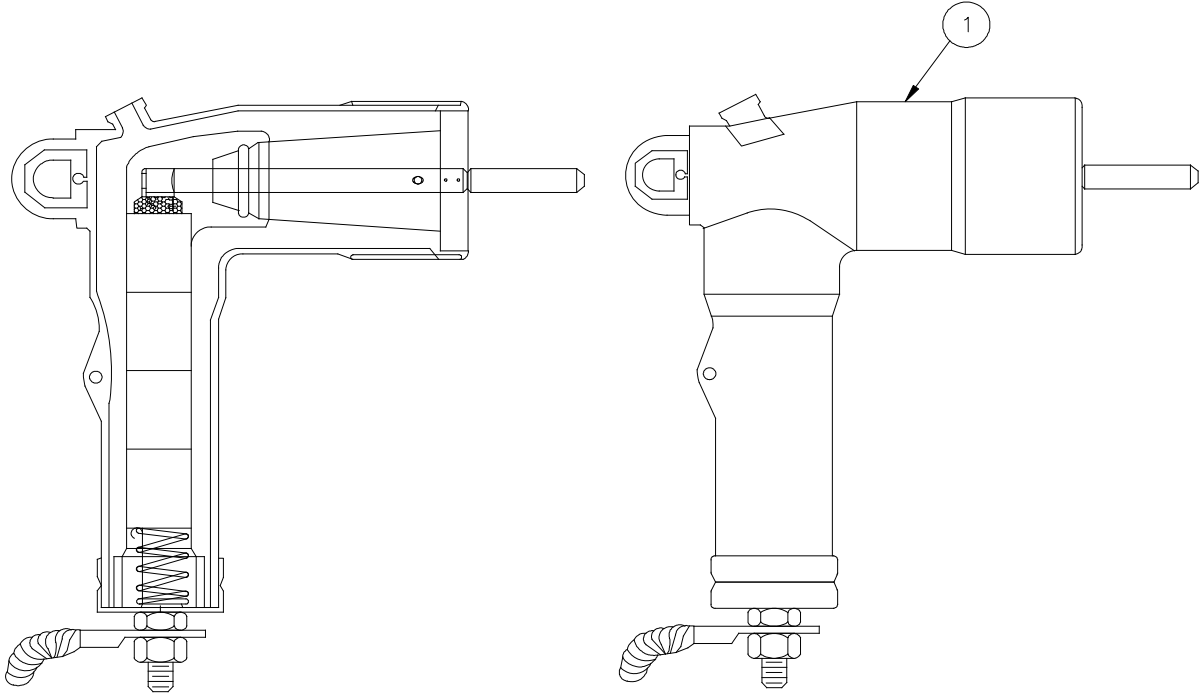


1502-05-02

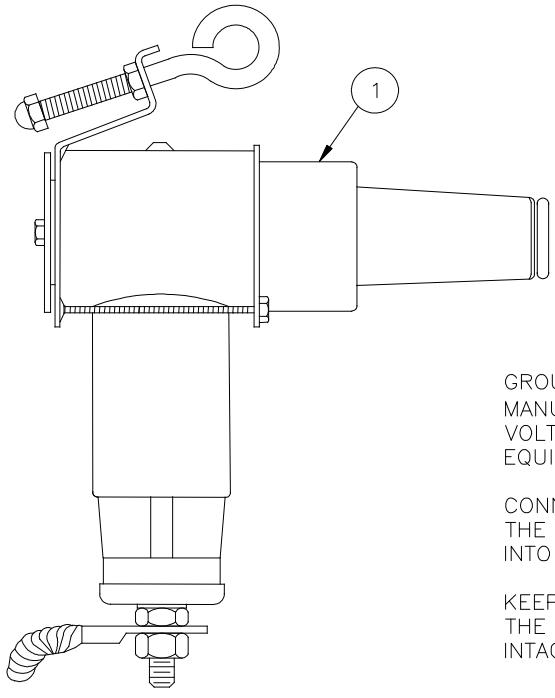




1502-07	UNDERGROUND APPARATUS	
Sheet 1 of 2	URD HARDWARE	
	<b>ARRESTER ELBOW AND PARKING STAND</b>	Rev: 08/01/20



1502-07-01




1502-07-05

GROUND DRAIN WIRES FROM ELBOW ARRESTERS PER MANUFACTURER'S INSTRUCTIONS TO AVOID DANGEROUS VOLTAGE LEVELS ON THE SURFACE OF DEAD-FRONT EQUIPMENT.

CONNECT GROUND LEADS ON ELBOW ARRESTERS TO THE GROUND WIRE, BEFORE THE ARRESTER IS PLUGGED INTO A TRANSFORMER.

KEEP GROUND LEADS AS SHORT AS POSSIBLE. LEAVE THE CRIMPED OR TINNED END OF THE GROUND LEAD INTACT.

	<b>UNDERGROUND APPARATUS</b> <b>URD HARDWARE</b>	<b>1502-07</b>
	<b>ARRESTER ELBOW AND PARKING STAND</b>	Sheet 2 of 2
Rev: 08/01/20		

**CU**

<b>CU-ID</b>	<b>CU-REF</b>	<b>CU-DESCRIPTION</b>
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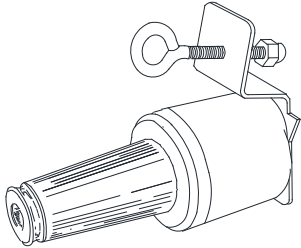
ARELBOW15KV	15020701	ARRESTOR ELBOW 15KV
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ID	PART NUM	PART DESC	QTY		CU-REF
1	0000000515	ARRESTER ELBOW MTL OXIDE VARISTOR 10KV DUTY CYCLE 15KV	1	EA	15020701

ARPARKGSTND15KV	15020705	ARRESTOR PARKING STAND 15KV
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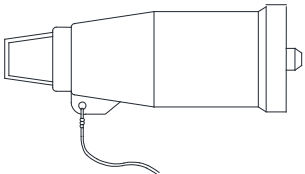
ID	PART NUM	PART DESC	QTY		CU-REF
1	0000000516	ARRESTER PARKN STAND MTL OXIDE VARSITOR 10KV CLASS 15KV	1	EA	15020705

<b>1502-09</b>	<b>UNDERGROUND APPARATUS</b>	
Sheet 1 of 2	<b>URD HARDWARE</b>	
	<b>PARKING STAND 200 AMP 15KV</b>	Rev: 08/01/20



1502-09-01

1502 - 09 - 02 BUSHING PARKING 2 WAY LDBRK 200 AMP  
15 KV IS USED ONLY FOR MAINTENANCE



1502-09-10 200 AMP  
1502-09-15 600 AMP

USE LOADBREAK PARKING STAND BUSHINGS TO TEMPORARILY PARK ENERGIZED CABLE ON THE PARKING STAND, DURING CONSTRUCTION OR PERMANENTLY AT THE OPEN-POINT OF A LOOP-FEED CIRCUIT.

USE LOADBREAK FEED-THRU PARKING STAND BUSHINGS TO TEST AND GROUND CIRCUITS.

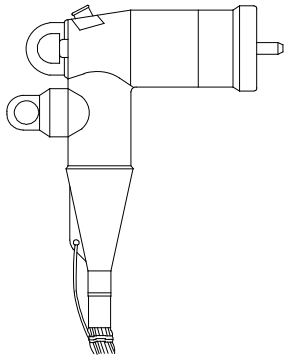
GROUND DRAIN WIRES FROM ELBOW ARRESTERS PER MANUFACTURER'S INSTRUCTIONS, TO AVOID DANGEROUS VOLTAGE LEVELS ON THE SURFACE OF DEAD-FRONT EQUIPMENT.



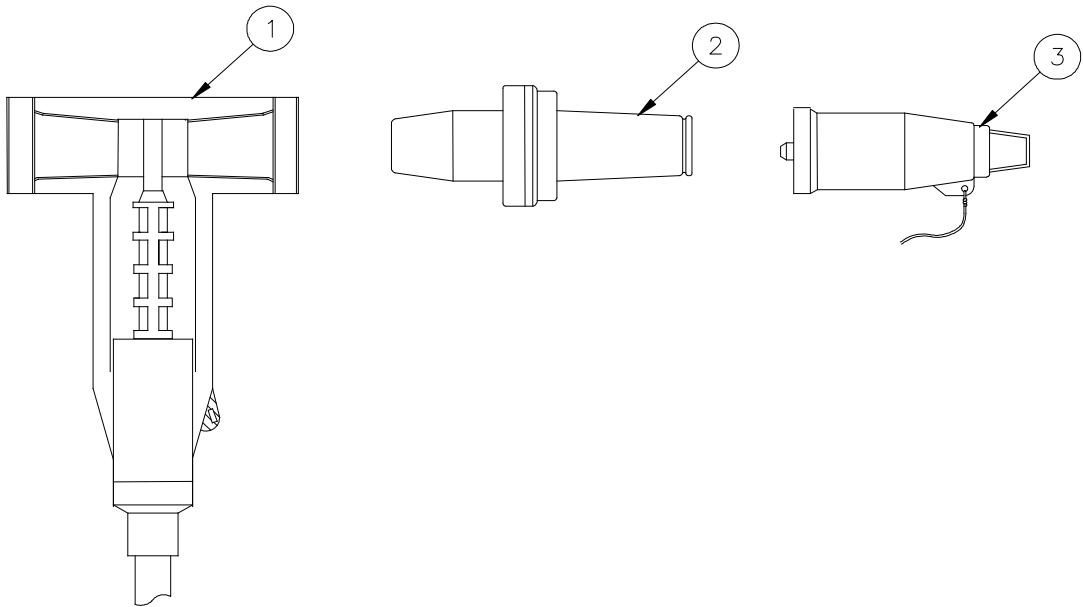


1502-15	<b>UNDERGROUND APPARATUS</b>	
Sheet 1 of 2	<b>URD HARDWARE</b>	
	<b>ELBOWS 200/600 AMP</b>	Rev: 08/01/20

GROUND DRAIN WIRES FROM ELBOWS PER MANUFACTURER'S INSTRUCTIONS.



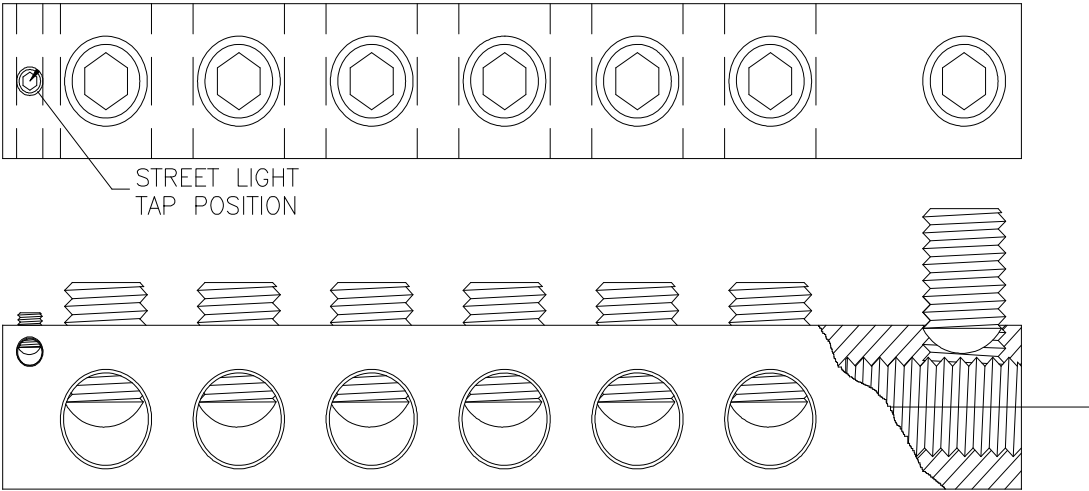
- 1502-15-01 #2 CU
- 1502-15-02 1/0 AL
- 1502-15-06 #2-1/0



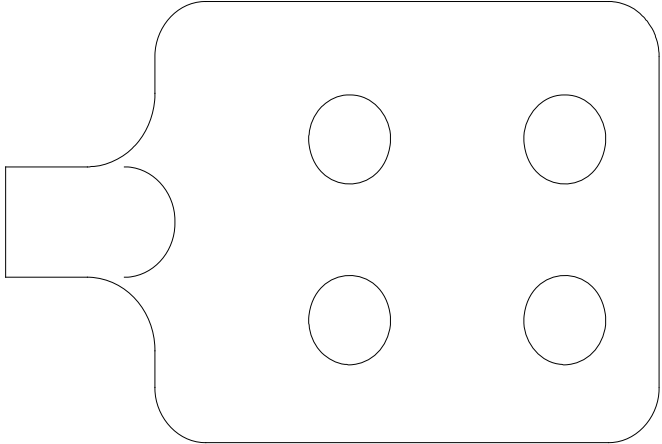
- 1502-15-12 250 CU 15KV
- 1502-15-15 500 CU 15KV
- 1502-15-20 1000 CU 15KV



UNDERGROUND APPARATUS  
URD HARDWARE  
SECONDARY CONNECTOR FOR PAD MOUNT  
TRANSFORMER



1502-17-01 5/8" STUD  
1502-17-02 1" STUD

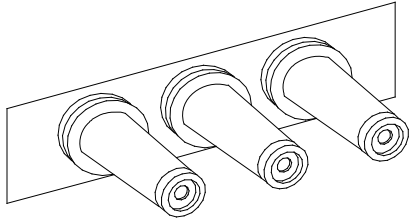


1502-17-11 5/8" STUD  
1502-17-12 1" STUD

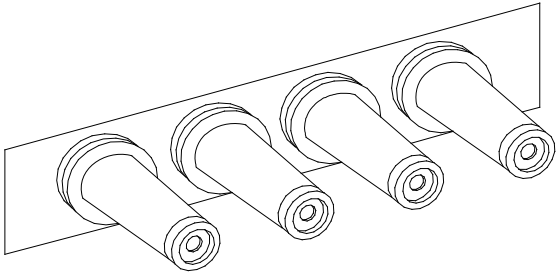


UNDERGROUND APPARATUS  
URD HARDWARE  
JUNCTION LOADBREAK 200 AMP 15 KV

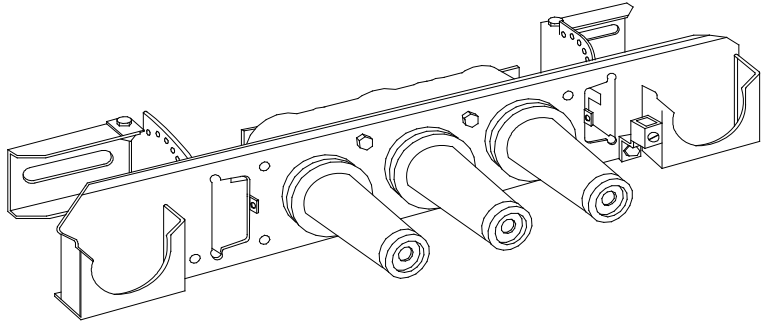
1502-19-03



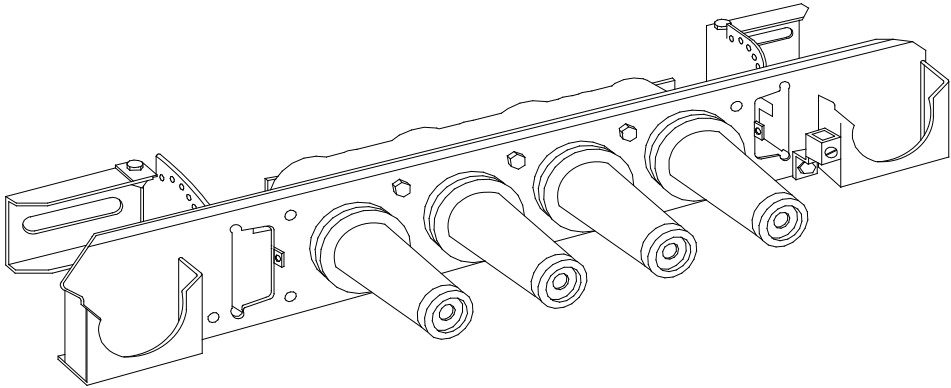
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1502-19-13

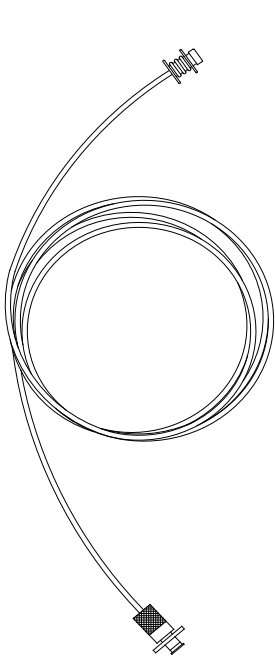


1502-19-14

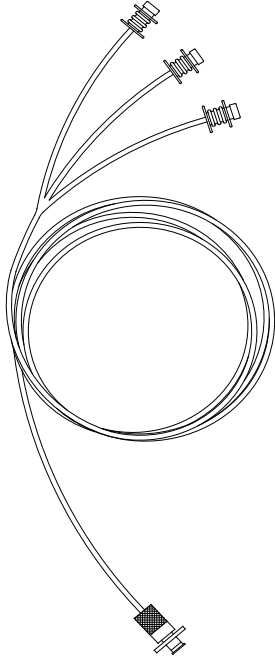




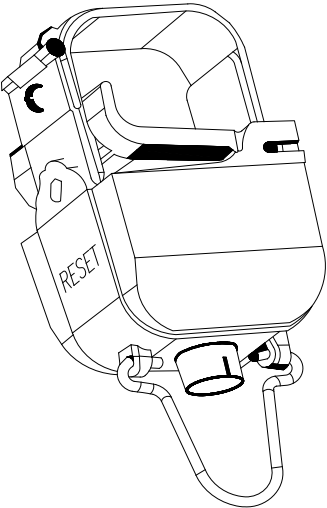
UNDERGROUND APPARATUS  
URD HARDWARE  
FAULT INDICATOR - PADMOUNT TRANSFORMER



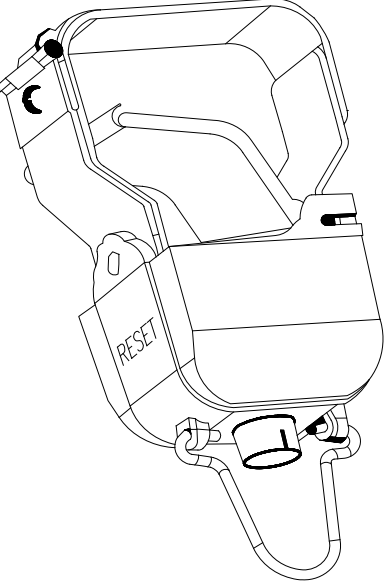
1502-20-15



1502-20-20




1502-20-05



1502-20-10



	<b>UNDERGROUND APPARATUS</b> <b>URD HARDWARE</b>	<b>1502-20</b>
	<b>FAULT INDICATOR - PADMOUNT TRANSFORMER</b>	Sheet 2 of 2
Rev: 08/01/20		

**CU**

<b>CU-ID</b>	<b>CU-REF</b>	<b>CU-DESCRIPTION</b>
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FAULTINDW/1PHLEDLEAD	15022125	FAULT INDICATOR WITH 1 PHASE LED LEAD
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ID	PART NUM	PART DESC	QTY	CU-REF
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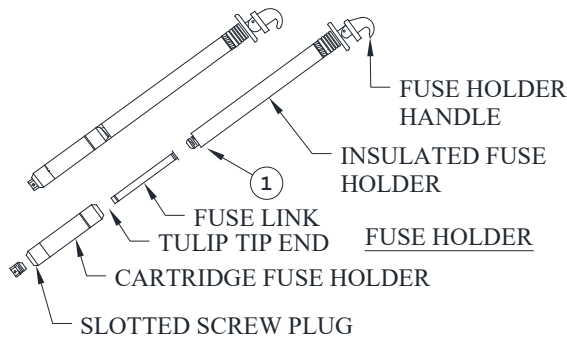
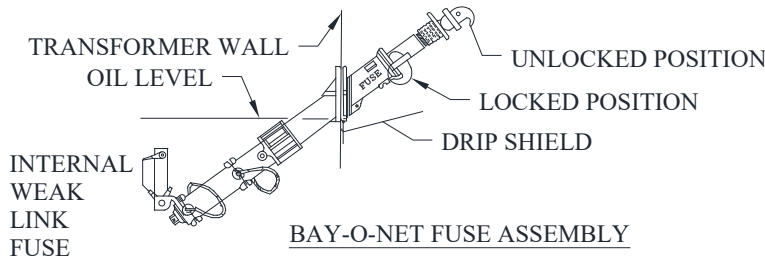
FAULTINDW/3PHLEDLEAD	15022130	FAULT INDICATOR WITH 3 PHASE LED LEAD
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ID	PART NUM	PART DESC	QTY	CU-REF
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FAULTIND1000W/3PHLEDLEAD	15022135	FAULT IND FOR 1000 MCM WITH 3PH LED LEAD
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ID	PART NUM	PART DESC	QTY	CU-REF
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**UNDERGROUND APPARATUS**  
**URD HARDWARE**  
**FUSE UNITS FOR PAD MOUNT TRANSFORMER**




1-PHASE PAD-MOUNTED XFMR SLUGGED	
EXTERNAL RISER FUSING	
25	5.5 (X)
50	10 (X)
75	15 (X)
100	20 (N)
167	40 (N)
250	50 (N)

3-PHASE PAD-MOUNTED XFMR SLUGGED	
EXTERNAL RISER FUSING	
75	5.5 X
150	10 X
225	15 X
300	20 N
500	40 N
750	50 N
1000	65 N
1500	100 N
2000	125 KS
2500	150 N

PAD-MOUNTED TRANSFORMER FUSES-INTERNAL		
1 PH (KVA)	FUSE SIZE	RISER FUSES
25	8 (DS C05)	65N
50	15 (DS C08)	65N
75	25 (DS C10)	100N
100	25 (DS C10)	100N
167	50 (DS C12)	150N
250	65 (HOL C03)	150N
3 PH (KVA)	FUSE SIZE	RISER FUSES
75	8 (DS C05)	65N
150	15 (DS C08)	65N
225	25 (DS C10)	100N
300	25 (DS C10)	100N
500	50 (DS C12)	150N
750	65 (HOL C03)	150N
1000	100 (HOL C04)	REFER TO NOTE (6)
1500	100 (HOL C04)	REFER TO NOTE (6)
2000	125 (HOL C05)	REFER TO NOTE (6)
2500	125 (HOL C05)	REFER TO NOTE (6)
SLUG		SEE CHART BELOW

- 1502-25-10 8A (DS C05)
- 1502-25-12 15A (DS C08)
- 1502-25-15 25A (DS C10)
- 1502-25-30 50A (DS C12)
- 1502-25-35 65A (HOL C03)
- 1502-25-45 100A (HOL C04)
- 1502-25-60 125A (HOL C05)
- 1502-25-55 140A (DS C05)
- 1502-25-70 SLUG

	<b>UNDERGROUND APPARATUS</b> <b>URD HARDWARE</b>	<b>1502-25B</b>
	<b>FUSE UNITS FOR PAD MOUNT TRANSFORMER</b>	Sheet 2 of 4
Rev: 08/01/20		

**Fusing Guideline (Assumes 360 Amp Substation Ground Relay Setting):**

1. Line fuses, overhead radial tap fuses, and riser fuses and switchgear fuses (that are not sized to protect for a single transformer) should be the largest fuse size that will operate effectively with the available fault current, will coordinate with any the AE source side and the load side line or equipment fuses, and will handle the maximum estimated load current.
2. Fusing for conventional overhead transformers should be sized specifically for the transformer or transformer bank.
3. Riser fusing for slugged padmount transformers should be sized specifically for the transformer.
4. Riser fusing for internally fused padmount transformers should be sized to coordinate with the largest internally fused transformer on the underground radial or loop.
5. Switchgear Fuses (PMH OR PME) - Switchgear fuses for underground loops and radials should be sized to coordinate with the largest internally fused transformer on the underground radial or loop. Where the switchgear fuse feeds a slugged or radial padmount transformer, the fuse should be sized specifically for the transformer.
6. Where the load or fault current exceeds the capability of standard AE fuses, the fault protection coordination must be achieved with relayed reclosers or other fault interrupting breakers. (Contact Engineering and Technical Services.)
7. Internal transformer fusing is sized specifically for the transformer. The internal transformer fuse must also coordinate with the AE source side riser fuse or switchgear fuse or other source side fault interrupting equipment.
8. The type "N" fuses listed in the table are the Kearney Type 200 fuses with "N" speed and characteristics that have been the standard AE fuse for some time. These are sometimes called just Type 200 fuses.
9. The 75 kVA through 750kVA three-phase padmount transformer sizes are only available in the loop-feed configuration. Slugging the transformer and fusing at the riser or in the switchgear is preferred for single transformer radial-feeds.
10. The 1000 through 2500 kVA three-phase padmount transformer sizes are available in both the radial and the loop-feed configuration. Fusing the transformer at the riser or in the switchgear is preferred for single transformer radial-feeds.

Comment: When coordinating between line fuses, switchgear fuses, and riser fuses, the general rule of thumb is to skip a fuse size between two fuses that are in series with one another. For example: If the existing line fuses are 150N fuses, the largest line, riser, switchgear, or transformer fuse that can be installed on the load side of the 150N's and maintain coordination would be 100N's. Or if the existing line fuses are 125N fuses, the largest line, riser, switchgear, or transformer fuses that can be installed on the load side of the 125N's and maintain coordination would be 80N or 65ks fuses. Equivalent fuse sizes for coordination purposes are as follows:

1. 175E Slo
2. 150N, 150E Slo, 125ks
3. 100ks, 125N, 125E Slo
4. 100N, 100E Slo, 80ks
5. 80N, 80E Slo, 65ks
6. 65N, 65E Slo, 50ks
7. 50N, 50E Slo, 40ks

What this means is that if the 175E Slo, 125E Slo, 125ks, 100ks, 150N, and 125N fuse sizes listed in this table are used at risers or in switchgears for underground loops or radials or at risers or switchgears to fuse individual transformers, they need to be fed from main line, because there is not a larger equivalent fuse in the table that will coordinate with these sizes if existing or installed as in-line fuses ahead of them on the feeder circuit.



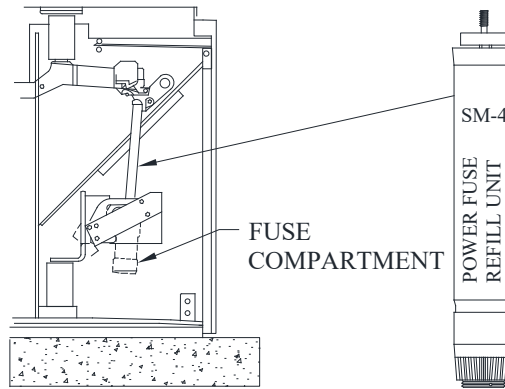


Rev: 08/01/20

**UNDERGROUND APPARATUS  
URD HARDWARE  
FUSE UNITS MOUNT SWITCHGEAR**

**1502-30A**

Sheet 1 of 3



PADMOUNT TRANSFORMER UPSTREAM SWITCH GEAR FUSE	
1-PHASE KVA	SWGR FUSE SML-4Z
25	65E
50	65E
75	100E
100	100E
167	150E
250	150E
3-PHASE KVA	SML-4Z
75	65E
150	65E
225	100E
300	100E
500	150E
750	150E
1000	175E
1500	175E
2000	Note 6
2500	Note 6
SLUGGED 3PH KVA	SML-4Z
500	40E
750	50E
1000	65E
1500	100E
2000	125E
2500	150E

- 1502-30-05 40E
- 1502-30-10 50E
- 1502-30-15 65E
- 1502-30-20 80E
- 1502-30-25 100E
- 1502-30-30 125E
- 1502-30-35 150E
- 1502-30-40 175E
- 1502-30-45 200E

1502-30B	UNDERGROUND APPARATUS	
Sheet 2 of 3	URD HARDWARE	Rev: 08/01/20
	<b>FUSE UNITS MOUNT SWITCHGEAR</b>	

**Fusing Guideline (360 Amp Substation Ground Relay Setting):**

1. Line fuses, radial tap fuses, and riser and switchgear fuses (not sized for a transformer, etc.) should be the largest fuse size that will operate effectively with the available fault current without damaging the load side conductor, will coordinate with any Austin Energy fuse or breaker on the source and the load side of the fuse, and will handle the maximum load current.

2. Fusing for conventional overhead transformers should be sized specifically for the transformer or transformer bank.

3. Riser fusing for internally padmount transformers should be sized to coordinate with the largest internally fused transformer on the underground radial or loop. Slugged transformers should only be used in a radial configuration.

4. Switchgear Fuses (PMH or PME) - Switchgear fuses for underground loops and radials should be sized to coordinate with the largest internally fused transformer on the underground radial or loop. Where the switchgear fuse feeds a slugged or radial padmount transformer, the fuse should be sized specifically for the transformer.

5. Where the load or fault current exceeds the capability of standard AE fuses, the fault protection coordination must be achieved with relayed reclosers or other fault interrupting breakers. (Contact System Engineering)

6. Internal transformer fusing is sized specifically for the transformer. The internal transformer fuse must also coordinate with the Austin Energy source side riser fuse or switchgear fuse or other source side fault interrupting equipment.

7. The type “N” fuses listed in the table are the Kearney Type 200 fuses with “N” speed characteristics that have been the standard AE fuse for some time. These are sometimes just called Type 200 Fuses.

8. 75 kVA to 750 kVA three-phase transformer sizes are only available in the loop-feed configuration. Slugging the transformer and fusing at the riser or in the switchgear is preferred for single transformer radial feeds.

9. 1000 to 2500 kVA three-phase padmount transformer sizes are available in both the radial and the loop-feed configuration. Slugging the transformer and fusing at the riser or in the switchgear is preferred for single transformer radial feeds.

10. Comment: When coordinating between line fuses, switchgear fuses, and riser fuses, please refer to the fuse coordination table listed above or the general rule of thumb at Austin Energy which is to skip two fuse sizes between fuses of the same family (ex: N Family) due to the Austin Energy fault currents:

1. 175E Slo
2. 150N, 150E slo, 125 KS
3. 125E Slo
4. 100N, 100E Slo, 80 KS
5. 80N, 80E Slo, 65 KS
6. 65N
7. 50N, 50E Slo

What this means is that if the 175E So, 150E Slo, 125E Slo, 150N, and 125 KS fuse sizes listed in this table are used at risers or in switchgears for underground loops or mult-transformer radials (or at risers or in switchgear used for fuse individually radially-fed transformers), they need to be fed from main line, because there is not a larger equivalent fuse in the table that can be installed ahead of them and still meet the general rule of thumb to skip two fuse sizes between in series fuses.

